

tion; medical societies succumbing to the meaningless and futile expediency of selling cash indemnity medical care contracts like any commercial insurance company, for no more noble motive than to dodge headaches with the local profession; Blue Cross demanding corporate dominance in an organization which provides medical care; physicians side-stepping their responsibility to future generations of practitioners by placing their destiny voluntarily in the hands of a corporation controlled by Blue Cross, or accepting minority representation in a corporation dominated by Blue Cross. Would that such medical groups had made a careful study of corporate practices and corporation history and were versed in the facts of the usurpation of corporate powers by management from both boards of directors and voting members! They should learn the significance of the book "Managerial Revolution" by Burnham. Of those medical groups which have stultified themselves by interposing a profit-making commercial insurance company between themselves and their patients, the less said the better! Such medical groups may be unwittingly writing their own obsequies.

PROGNOSIS

The present too slow expansion of medical care plans is disconcerting. The controversies and the backtracking may be demonstrating our own ineptness to a properly interested and certainly

informed public opinion. Our only defense in Washington today against a program of compulsory health insurance is the plea that we be given time to accomplish the objective of prepaid medical care on a voluntary basis. If we fail and are forced to return five or ten years from today to a Congressional hearing on the needs of compulsory health insurance, the accusing finger of the politician will then be pointed at us with the charge "Gentlemen you asked for time. You had it! In that time you have proved your incompetency to solve this basic national problem of prepaid medical care on a voluntary, free-enterprise basis. You have no other defense left! In 1946 you raised no other adequate defense! At that time you admitted all the problems which had to be solved. Good day, gentlemen! Government must now solve your problem for you in behalf of the public welfare." Doctors of California, we must not falter in our medical care programs, lest we burn our last bridge behind us! We must preserve and expand them. To accomplish any worthwhile purpose at all in the current American scene, this must be on a service basis for the under-income group. On this rampart we can defend our precious heritage, and serve as a beacon for our fellow Americans—

Lest under pretense of a better way
We find our country in the ancient snare
Of tyranny disguised in fulsome phrase.

—*Spellman.*

What the War Taught About Amputations*

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BEFORE we return to more diversified civilian surgery, it might be well to record what the war taught regarding amputations. The policy of concentrating the amputation cases in centers provided a large surgical experience, and the close association with the limb-fitters contributed to the knowledge of what constitutes a stump suitable for a prosthesis. The resulting evaluation of the various types of amputations can well be carried over to civilian practice.

LISFRANC

A successful amputation can be carried out through the metatarsals, and if necessary the metatarsals can be disarticulated from the tarsals. Proximal to this point, however, one cannot perform a satisfactory amputation through the foot.

In performing a Lisfranc, it is necessary to preserve a long flap of the heavy plantar skin to cover the end of the stump. This amputation will,

of course, deprive the patient of the spring in his gait.

CHOPART

The Chopart amputation is mentioned only to deprecate it. Any amputation through the proximal tarsal bones will sever the insertions of the dorsi-flexor tendons and leave the Achilles tendon unopposed. What remains of the foot will go into an equino-varus deformity, and the ankle joint will be of little value. Such a stump is better converted into the Syme amputation, which will be discussed later.

PIRAGOFF

In the Piragoff amputation, the ankle joint is removed and the os calcis is placed on the end of the tibia. It provides a completely end-bearing stump, but has the disadvantage of bringing the end of the stump so close to the ground that it is difficult to incorporate a mechanical ankle beneath it. In this respect, it is inferior to the Syme amputation.

*The opinions or assertions contained herein are the private ones of the writer and are not to be construed as official, or reflecting the views of the Navy Department or the Naval Service at large.

SYME

The Syme is the best amputation in the region of the ankle. Where a Lisfranc amputation cannot be performed, the next site of election is the Syme.

In performing a Syme amputation, the heavy skin of the heel is placed over the end of the tibia. This amputation is of sufficient importance to warrant a more detailed description of the technique.

Two points are selected about one centimeter beneath the medial and the lateral malleoli. These points are connected by two incisions, one carried forward across the instep and the other downward across the anterior part of the heel. In order to insure the equal length of the two flaps, it is well to measure these two lines before making the incisions. The ankle is disarticulated and the os calcis removed by blunt dissection. It is of the utmost importance to avoid injury to the posterior tibial artery during these maneuvers. The tibia and fibula are sawed just proximal to the articular cartilage, and the heavy skin of the heel is secured over the end.

The Syme amputation is carried out through cancellous bone, which is a requisite to end-bearing. Also, it is covered by heavy skin. The patient can walk directly on it, which avoids the use of crutches around the house when the prosthesis has been removed.

The mechanical ankle closely reproduces the normal so long as the patient walks on level ground. The Syme amputation stump is durable and the prosthesis is functionally very satisfactory. However, the Syme has one important disadvantage. The prosthesis is bulky, and from a cosmetic viewpoint it is unsightly. It would be well to avoid a Syme amputation in a girl who values a trim ankle.

LEG

Amputations below the knee have given very gratifying results, the reason being that the foot and the ankle joint can be much more nearly reproduced mechanically than can the knee joint.

The weight is carried on the tibial condyles by a side-bearing type of prosthesis, and the stump serves merely as a lever which manipulates the artificial leg. The important muscles are the quadriceps and the hamstrings, which insert into the proximal end of the tibia. The muscles which are severed by the amputation are no longer functional; consequently, there is no advantage in a long stump. On the other hand, too short a stump will be lifted out of the bucket of the prosthesis by the hamstrings when the knee is flexed. About 6½ inches of tibial length is optimum.

In performing an amputation below the knee, the anterior flap is laid out longer than the posterior, so that the resulting scar will lie posterior to the end of the tibia. As in other amputation stumps, it is desirable to cover the end of the stump by fascia as well as by skin. The fascia cannot be incorporated with the anterior flap, as

it blends with the periosteum over the crest of the tibia. However, a long flap of the posterior fascia can be used to cover the end of the stump, and the long anterior flap of skin can be closed outside it like a double-breasted coat. This maneuver will prevent the exposed ends of the muscles from becoming adherent to the skin.

After the flaps have been dissected back, the tibia and fibula are sawed through at the previously designated point. The fibula is subsequently shortened an additional 1¼ inches. The muscles are severed at the same level as the tibia and are beveled posteriorly. The large blood vessels are secured and the tourniquet removed. The nerves are gently drawn down, severed, and allowed to retract into the soft tissues. A nerve that becomes adherent in the scar on the end of a stump is apt to become painful. The crest of the tibia is beveled to give a well rounded stump, and the flaps are closed. The fibula contributes to the resilience of the stump and should be retained.

During the war, every effort was made to preserve the knee joint, as the best mechanical knee cannot approach the human knee in functional perfection. Where the amputation has to be carried out through the cancellous bone of the upper tibia, it is desirable to obtain a partially end-bearing stump. The very short fibula is removed, as it tends to become abducted and punch into the skin on weightbearing. If it is at all possible, the end of the stump is covered by intact skin and the scar falls well posterior. In a short stump, partial end-bearing helps to keep the stump in the bucket when the knee is flexed.

GRITTI-STOKES

To obtain an end-bearing stump it is necessary to perform the amputation through the cancellous bone at the distal end of the femur. In the classical Gritti-Stokes amputation the patella is placed on the end of the femur. In the modification of this operation the patella is removed and its capsule is placed over the end of the femur. In young men of military age, it is usually preferable to use the patella.

In performing the Gritti-Stokes amputation, or its modification, a long anterior flap is laid out, the incision crossing the mid-line over the insertion of the infra-patellar tendon. This incision is carried down into the knee joint, and the patella is included in the flap. The posterior incision crosses the mid-line one centimeter distal to the popliteal fold and is carried down through the fascia. The popliteal vessels are secured and the femur is sawed through the flare of the condyles. The posterior half of the patella is removed, and the patella is secured onto the end of the femur by ligatures through drill holes to prevent side slipping. The infra-patellar tendon is sutured to the posterior fascia to prevent the patella from tipping up when the quadriceps muscles resume their pull. The resulting stump preserves a maximum of the musculature of the thigh and, therefore, is strong and mobile. It provides complete end-bearing and is well regarded by the patients.

It is not so well regarded by the limb-makers, as it leaves no space in which to incorporate a mechanical knee, and the prosthesis has to be made with hinges at the sides. Patients with a Gritti-Stokes amputation walk very satisfactorily and can bear weight on their stumps indefinitely.

THIGH

Amputations through the thigh present special problems. The stump not only serves as a lever, but the muscles intrinsic in the stump motivate it. Consequently, the higher the amputation the greater the loss of musculature and the weaker the stump will be. This is particularly true of the power of adduction, and the reason is readily apparent when one considers that the adductor muscles insert on the femur all the way down to the adductor tubercle.

The longer the thigh stump, the better that patient will walk. It is, however, necessary to remove the distal four inches of the femur in order to allow room for the housing of the mechanical knee. The site of election of an amputation through the thigh is, therefore, four inches proximal to the knee joint.

In performing an amputation through the thigh, the anterior flap is laid out longer than the posterior so that the resulting scar will not lie directly off the end of the femur. The fascia is included in the flaps. The femur and the muscles are severed in one plane. The stump is covered by fascia and skin, which are sutured as separate layers. The interposition of the fascia prevents the skin from becoming adherent to the exposed ends of the bone and muscles. Postoperatively, a flexion con-

tracture is prevented by holding the stump in a neutral position during the healing. Exercises are instituted to strengthen and to increase the range of motion of the stump.

FOREARM

Much has been written about the present day artificial arms, and there certainly is great room for improvement. However, the sense of touch, which is so important in the natural hand, cannot be imparted to any artificial hand. Also, the hand is a much more delicate mechanism than the foot and is proportionately more difficult to replace.

One advance was made near the end of the war in amputations through the forearm. Prostheses were devised which utilized pronation and supination. Amputation surgery has been modified to meet this development. The pronator quadratus muscle is preserved, together with the distal articulation between the radius and the ulna. In order to taper the stump so that the prosthesis can be fitted on over the end, it is advisable to remove the styloid process of the ulna and to bevel the lateral flare of the radius. It is also well to remove the articular cartilage from the end of the radius. Such a stump will be rather long but will preserve the full function of pronation and supination.

A double arm amputee will become highly proficient in the use of his artificial arms through sheer necessity. A single arm amputee will, however require considerable training to develop reliance on his prosthesis, and lacking that training, he will be apt to discard his artificial arm.

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Maternal, Fetal and Neonatal Mortality*

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I THOUGHT that it might be of interest to this group to consider the end-results which have been accomplished in the field of Obstetrics in the last ten or fifteen years, to examine the causes for these accomplishments, and to consider in what ways even better results might be achieved. The object of the procedures which are carried out in the care of prospective mothers, in their deliveries, and in the care of their newborn children is to afford the greatest possible assurance that avoidable complications will be reduced to the minimum, that as many mothers as possible will be carried through their pregnancies safely, and that their newborn children will be treated so skilfully that the neonatal death rate will be brought as near as possible to the irreducible minimum of inevitably fatal con-

ditions. With regard to maternal mortality, which is the measure of the efficiency of our efforts in obstetrics, this country occupied a rather unenviable position until recent years. The United States was far down the list with respect to its maternal mortality rate. (Table 1.)

TABLE 1.—*Comparison of Maternal Mortality in the United States and Certain Foreign Countries (1932)*

Country	Maternal Deaths Per 10,000 Live Births
Australia	56
Belgium	48
Canada	50
Chile	70
Denmark	35
England	42
Italy	30
Netherlands	30
New Zealand	41
Norway	26
Scotland	63
Sweden	27
United States	63

* Chairman's address. Read before the Section on Obstetrics and Gynecology at the Seventy-fifth Annual Session of the California Medical Association, Los Angeles, May 7-10, 1946.